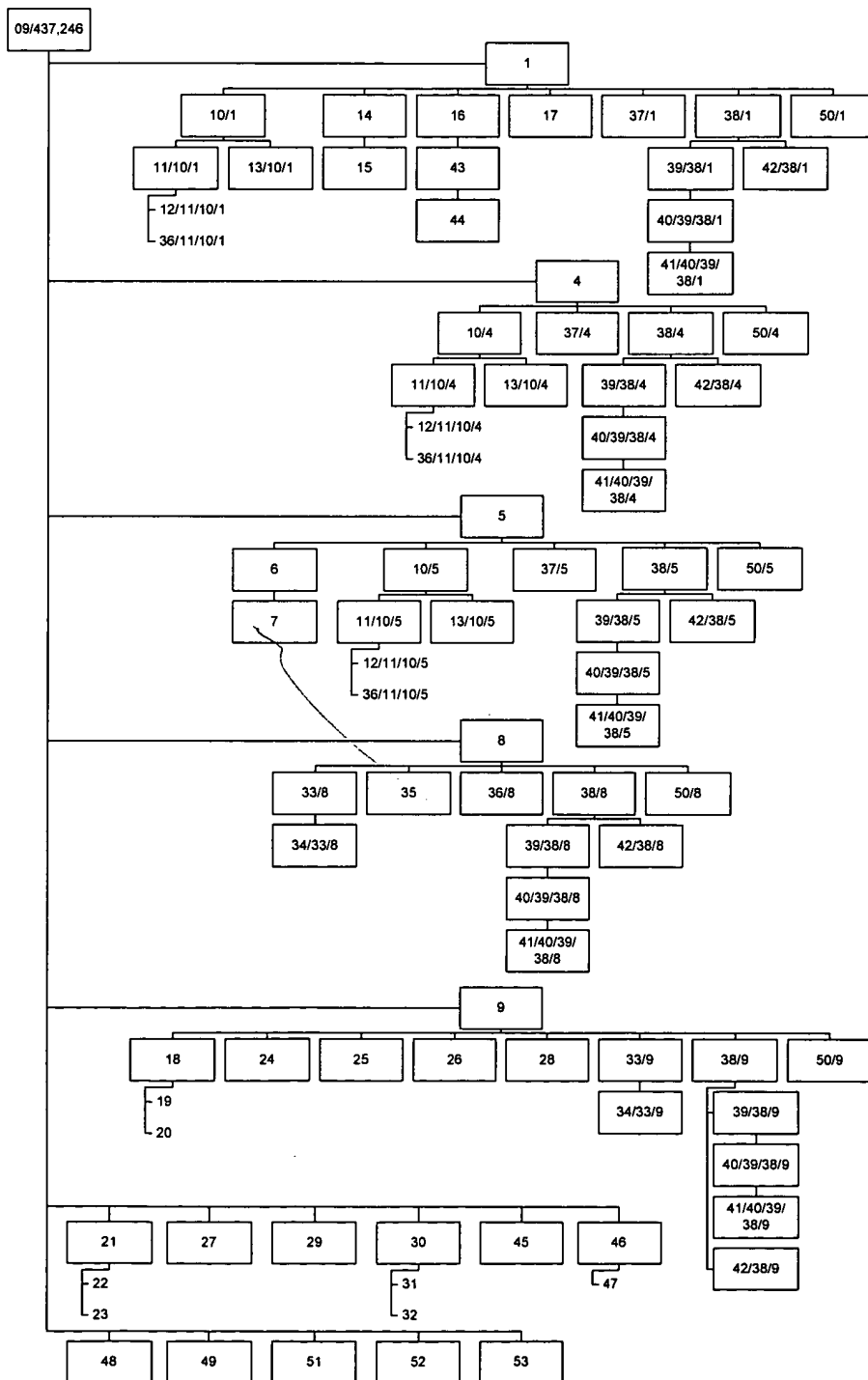


REMARKS

Claims map.

The following claims map is provided for the Examiner's convenience.



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General remarks.

Claims 1 and 4-51 are all the claims pending in the application. Independent claim 2 and dependent claim 3 have been canceled. The multiple dependent claims which depended from independent claim 2 have been amended so as to no longer depend from claim 2. Claim 21 has been rewritten in independent form. Independent claims 5, 27, and 30 have been allowed.

The only prior art rejection is a rejection under 35 U.S.C. §102 over Nagasaki, which covers independent claims 1, 4, 8, 9, 29, 48, and 49, and certain of their respective dependent claims.

For the Examiner's convenience, in view of the many multiple dependent claims, Applicant provides the following claim map.

Independent claim 1.

Independent claim 1 now requires a sealing film sealing the external opening of the ink supply port until the ink supply needle penetrates into the ink supply port. This feature provides a better performance for keeping the cartridge air tight before such a time as the ink supply needle penetrates the ink supply port. This prevents not only ink leakage, but also the creeping in of air through the ink supply port. Nagasaki does not meet this requirement and therefore Applicant respectfully requests the Examiner now to withdraw this rejection of claim 1 and its dependent claims (i.e., dependent claims 14, 15, 16, 17, 43, and 44, and the following multiply dependent claims: 10/1, 11/10/1, 12/11/10/1, 36/11/10/1, 13/10/1, 37/1, 38/1, 39/38/1, 40/39/38/1, 41/40/39/38/1, 42/38/1, 43, 44, and 50/1).

Independent claim 2.

This claim is canceled, without prejudice or disclaimer, rendering the rejection moot as to independent claim 2 and its dependent claims.

Independent claim 4.

Applicant has not amended claim 4, and respectfully requests the Examiner now to carefully reconsider this rejection in view of the following remarks.

Claim 4 requires a porous member accommodated in the ink chamber for absorbing ink, and a valve device as specified in the claim. Nagasaki teaches an ink cartridge having a sponge, but does not teach or suggest using the sponge together with a valve.

In the cartridge as set forth in claim 4, the porous member more effectively provides an attractive force to the ink existing in the ink supply port. Given this, even when the ink sealing between the valve device and the packing member is less than perfect, the sealing property can be maintained. Thus, the necessity to achieve perfection in the manufacture of the valve device and packing member is reduced.

The combination of a porous member and the valve device and packing member recited in the claim provides for a system that can be achieved with reduced cost, and yet still can provide excellent ink sealing results. Such a combination is not taught or suggested in Nagasaki or any other prior art.

For these reasons, Applicant respectfully requests the Examiner to withdraw this rejection of independent claim 4 and its dependent claims (i.e., the following multiply dependent claims: 10/4, 11/10/4, 12/11/10/4, 13/10/4, 37/4, 38/4, 39/38/4, 40/39/38/4, 41/40/39/38/4, 42/38/4, and 50/4).

Independent claim 8.

Independent claim 8 requires that the valve device have a valve body contacting with the packing member and having a substantially flat surface with which the ink supply needle contacts. Applicant respectfully requests the Examiner to carefully reconsider this rejection, and to withdraw it, in view of the following comments.

In figure 1 of Nagasaki, the conventional ink cartridge is used with a tapered ink needle. Nagasaki teaches that this is a bad approach. Instead, Nagasaki recommends, in figures 2, 5, and

6, an ink supply pipe instead of a needle. The ink supply pipe of Nagasaki has a flattened top end and cannot be said to be an ink needle.

Although Nagasaki therefore does not teach the use of an ink needle, the claimed invention actively applies a tapered ink needle with a valve device where the valve device has a substantially flat surface with which the ink supply needle contacts. Because of the substantially flat surface, an ink channel is more efficiently established through an ink supply port in an ink cartridge. Using such an arrangement without a tapered ink needle does not achieve the same goal or efficiency. That is to say, Nagasaki does not teach the valve device with the substantially flat surface in combination with a tapered ink needle, whereas applicant's independent claim 8 requires such. Applicant therefore respectfully submits that independent claim 8 patentably distinguishes over Nagasaki. Applicant therefore respectfully requests the Examiner to withdraw this rejection of independent claim 8 and also its dependent claims (i.e., dependent claim 35 and the following multiply dependent claims: 33/8, 34/33/8, 36/8, 38/8, 39/38/8, 40/39/38/8, 41/40/39/38/8, 42/38/8, and 50/8).

Independent claim 9.

Applicant respectfully submits that claim 9, as now amended, patentably distinguishes over Nagasaki.

Claim 9 has been amended to require that the guide body operably suppress a horizontal deviation of the valve device. Thus, when a valve body is urged by an ink supply needle for opening the ink channel, the valve body is properly guided so as to slide substantially vertically with respect to a packing member provided in an ink supply port. Then, when the valve body is subjected to be released from being urged to close the ink channel, the valve body is properly abutted back against the packing member. Thus, even when the claimed ink cartridge is repeatedly detached from and attached to a print head of a printing apparatus, the valve device mechanism can surely seal ink in an ink supply port when the cartridge is not in use.

Nagasaki does not teach or suggest such a feature. As shown in figure 6 of Nagasaki, the chamber 13 has a wall adjacent to a valve on the left-hand side for only the purpose of

temporarily retaining the ink supply to the ink head. Thus, when the valve body is urged or released by a supply pipe 2, the wall would not actively support the valve for suppressing the horizontal deviation of the valve. In other words, Nagasaki does not teach or suggest a guide body that operably suppresses a horizontal deviation of the valve device.

Therefore, applicant respectfully requests the Examiner to find that Nagasaki does not anticipate independent claim 9, as now amended, and to withdraw this rejection of independent claim 9 and its respective dependent claims (i.e., dependent claims 18, 19, 20, 24, 25, 26, and 28, and the following multiply dependent claims: 33/9, 34/33/9, 38/9, 39/38/9, 40/39/38/9, 41/40/39/38/9, 42/38/9, and 50/9).

Independent claim 21.

The Examiner indicated that claim 21 would be allowable if appropriately rewritten in independent form. Applicant has herein rewritten this claim, and therefore respectfully requests of the Examiner the allowance of independent claim 21 and its dependent claims 22 and 23.

Independent claim 27.

The Examiner allowed claim 27.

Applicant herein amends claim 27 to remove a limitation unnecessary for patentability over the prior art. Namely, claim 27 no longer requires that the guide body be made of an elastic material. Applicant respectfully submits that the claim still is allowable, and respectfully requests the Examiner to confirm this point.

Independent claim 29.

Independent claim 29 has been amended for the sake of clarity, and Applicant respectfully submits that the claim patentably distinguishes over Nagasaki. Figs. 5 and 6 of Nagasaki disclose a valve 18 in a chamber 13. Nagasaki does not, however, teach or suggest a member protruding from the valve body as set forth in claim 29.

In Nagasaki, the valve has a hemispheric surface which is convex, for providing ink sealing to the outside of the ink cartridge.

The invention as set forth in claim 29 requires a valve body with a surface facing the packing member, and a member protruding from the surface and contacting the tip of the needle.

In Applicant's Fig. 17b, e.g., such a member is shown. In this exemplary embodiment, protruding portion 45b comes in contact with the tip end of the ink supply needle 104 at the time when the ink supply needle forms a sealed connection with the packing member. That is, the valve body is urged by the ink supply needle to open an ink supply port 6 at the time when the ink supply needle and the packing member form a sealed connection with each other. Thus, undesirable air or bubbles do not enter the ink supply port.

The Nagasaki apparatus does not provide the foregoing advantages, and does not meet the requirements of independent claim 29, as now amended. Applicant therefore respectfully requests the Examiner now to allow independent claim 29.

Independent claim 45.

This claim has been withdrawn from consideration by the Examiner.

Independent claim 46.

Independent claim 46 has been amended to require that abutting of the valve device against only the upper part of the protruding rim performs the closing of the ink channel. Nagasaki is respectfully submitted to lack this requirement.

Although Figs. 5 and 6 of Nagasaki show a packing 19 disposed in a connection part 16, the reference does not teach or suggest a protruding rim of the packing. In Nagasaki, when a supply pipe 2 is pulled out of the connection part, a valve 18 is abutted against the packing. To ensure continued and maintained ink sealing in the connection part, the valve must be strongly abutted against the packing.

However, the claimed invention provides a protruding rim of the packing member, which can efficiently achieve ink sealing in conjunction with an ink supply needle. The protruding rim is elastically abutted against the needle when the needle penetrates into an ink supply port, or against a valve member when the needle is pulled out from the ink supply port. Because of the elastic abutment, an ink cartridge can be attached or detached with less effort while maintaining

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ink sealing in a proper manner. This beneficial effect of the claimed invention is not taught or suggested by the cited reference, and the above identified requirements of the claim are not met in Nagasaki.

Applicant therefore respectfully requests the Examiner to withdraw this rejection of independent claim 46 and its dependent claim 47.

Independent claims 48 and 49.

Independent claims 48 and 49 are substantially similar to claims 8 and 9, except that they relate to a printer having the inventive ink cartridge instead of just the cartridge itself. Therefore, the comments already supplied with respect to independent claims 8 and 9 are respectfully submitted to apply with equal force to this rejection of claims 48 and 49. For the same reasons, therefore, applicant respectfully requests the Examiner to withdraw this rejection of independent claims 48 and 49.

Claims indicated as being allowed or allowable.

The Examiner indicated that independent claim 5 is allowed. Therefore, certain other dependent claims are allowed as well, including dependent claims 6 and 7, and the following multiply dependent claims: 10/5, 11/10/5, 12/11/10/5, 36/11/10/5, 13/10/5, 37/5, 38/5, 39/38/5, 40/39/38/5, 41/40/39/38/5, 42/38/5, and 50/5.

The Examiner allowed claim 27, but claim 27 has been amended herein and the Examiner's confirmation of the continued allowability of this claim is respectfully requested in view of the points mentioned above.

The Examiner indicated that claim 21 and its dependent claims 22 and 23 would be allowable if rewritten in independent form. Claim 21 has been so rewritten, and the allowance of claims 21-23 is therefore respectfully requested.

Applicant is grateful that the Examiner indicated the allowability of claims 17-20, 24, 25, 33 (33/8 and 33/9), 34 (34/33/8 and 34/33/9), 42 (42/38/1, 42/38/4, 42/38/8, and 42/38/9), and 50 (50/1, 50/4, 50/8, and 50/9). Nevertheless, applicant respectfully submits that these claims can be allowed in their present form in view of their dependence from independent claims 1, 4, 8, and 9

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(which are allowable for the reasons pointed out above). Applicant therefore respectfully requests the Examiner to allow these claims in their present form.

The Examiner has withdrawn claims 43/16/1 and 44/43/16/1 from consideration, but respectfully requests the Examiner now to allow these claims in view of their dependence from allowable claim 1.

New claim 51.

New claim 51 patentably distinguishes over the prior art, including Nagasaki, in view of its requirements for:

a second member contained in said ink channel elastically abutting against said first member in a direction which is the same as a direction of the sealing by said first member with said second member, said second member selectively opening and closing said ink channel in conjunction with the ink supply needle;

wherein a direction of said ink channel is substantially the same direction of the sealing by said first member with said second member.

taken in combination with the other elements of the claim.

New claim 52.

New claim 52 is substantially similar to claim 1 now on file, except that it omits the requirement for the valve to not comprise a sphere, and includes the limitations of claim 42. Claim 42 has been indicated as being allowable. New claim 52 is respectfully submitted to be patentable for the same reasons as claim 42.

New claim 53.

New claim 53 is substantially similar to claim 1 now on file, except that it omits the requirement for the valve to not comprise a sphere, and includes the limitations of claim 50.

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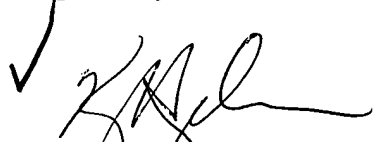
Claim 50 has been indicated as being allowable. New claim 53 is respectfully submitted to be patentable for the same reasons as claim 50.

Conclusion and request for telephone interview.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,

✓ 

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